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GEOGRAPHIC

**INSIDE:** **FREE  
PULLOUT  
POSTER**

# KIDS

**DARE TO EXPLORE**  
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**Meet  
the  
White  
Lion**



**Plus...  
Games,  
Jokes, and  
More!**



# Back to School

doesn't have to mean back to boring!



Check out these hot new books that will keep the fun alive, then enter the contest for a chance to win a backpack filled with these items! (see sweepstakes rules below)

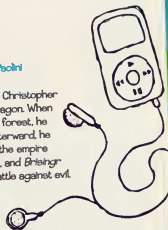


## The Inheritance Cycle: Eragon, Eldest, and Brisingr

by New York Times best-selling author Christopher Paolini

Enter the Inheritance cycle. From best-selling author Christopher Paolini comes the story of a Dragon Rider named Eragon. When Eragon, a simple farmboy, finds a dragon egg in the forest, he learns he is destined to be a Dragon Rider. Soon afterward, he begins his training and sets out on a quest to save the empire from the evil king, Galbatorix. Pick up *Eragon*, *Eldest*, and *Brisingr* and join Eragon and his dragon, Saphira, as they battle against evil.

Logic. Fighting. Flying.  
Do you have the skills to be a Junior Rider?  
Begin your training at [elaguests.com/riders](http://elaguests.com/riders)



## Everything for a Dog

By Ann M. Martin

Would you do anything to own a dog? Then you're sure to love reading *Charlie, Henry, and Bone's* powerful story in this gripping, heartfelt tale—perfect for anyone who has ever longed for a dog, or truly loved one.



Foelwell and Friends  
Visit [us.macmillan.com/everythingfordog](http://us.macmillan.com/everythingfordog)  
and download an awesome FREE Iron-on  
T-shirt transfer!



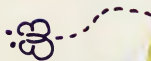
## The Count's Crystal

By Rachel Marsh

Kidnapped by a vampire? Impossible! Or so Alexis thought...until it happened to her! Discover the impossible in *The Count's Crystal*, an exciting new book by young author Rachel Marsh.

Available now at Amazon.com  
and Borders.com!

## DogEared



Remember to keep checking [kids.nationalgeographic.com](http://kids.nationalgeographic.com) for more fun after school. Be sure to go to [kidsblog.nationalgeographic.com/dogeared](http://kidsblog.nationalgeographic.com/dogeared) so you can tell us about your favorite back-to-school reading adventures.

Review Official Rules at [kids.nationalgeographic.com/contests/Back-to-school-sweeps](http://kids.nationalgeographic.com/contests/Back-to-school-sweeps). NO PURCHASE NECESSARY. A PURCHASE WILL NOT INCREASE YOUR CHANCES OF WINNING. MANY WILL ENTER. FEW WILL WIN. Open to U.S. residents (excluding Puerto Rico) between 6 and 14 years old. Employees or contract employees of Sponsor National Geographic Society, Random House Inc., Macmillan, Vintage Press, and related parties are ineligible. Entries must be postmarked by September 30, 2009 and received by October 7, 2009. LIMIT: One (1) entry per person. Limit one prize per person, family, or household. Twenty-five (25) Grand Prize winners will be randomly selected. Grand Prize: Everything for a Dog (ARV \$16.99 U.S.); The Inheritance Cycle: Eragon, Eldest, and Brisingr (ARV \$18.99 U.S.); Count's Crystal (ARV \$12.95 U.S.); ARV \$48.93 U.S. Odds of winning depend on the total number of eligible entries received. Conditions and restrictions apply. VOID IN PUERTO RICO, AND WHERE PROHIBITED BY LAW.

**DELICIOUS**  
Start your day off right  
with lots of energy. Here's  
a breakfast that will keep  
you going strong all the  
way to lunchtime:

[kids.nationalgeographic.com/  
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POSTER**

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Go online to play free games, learn about deadly pufferfish,  
watch animal videos, and vote in our back-to-school poll.

[kids.nationalgeographic.com](http://kids.nationalgeographic.com)



## On the Cover

This white lion cub and its family live in South Africa.

COVER PHOTOGRAPH © KARINE AIGNER

COVER INSETS: MARIE THISEN/NGS; STAFF; MONEY: VETURIAUTOMOBILES (ECO-CAR); MONDOLITH STUDIOS (SURREY); PAGE 3: © KARINE AIGNER  
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(PENGUINS); NATHAN JUREVICIUS (LEPPER)



BY JEFFREY WANDEL

# Check out these 10 outrageous facts.

Snow leopards can't



**ONLY  
FEMALE  
BEES  
STING.**

A beefalo is  
part bison and  
part cow.



WHEN YOU HAVE  
LIVED FOR  
2.4 BILLION  
SECONDS,  
YOU WILL BE  
75 YEARS OLD.

If you  
continued to  
**grow**  
as fast as an average baby,  
you'd weigh about  
**413,300 pounds**  
by age 10.

A  
CANADIAN  
COMPANY  
BOTTLES  
WATER

THAT COMES  
FROM

12,000-  
TO  
15,000-

YEAR-OLD  
ICEBERGS.

You  
can see  
colorful  
autumn  
leaves  
from  
space.

A **ZEPTOSECOND** IS  
ONE-BILLIONTH OF A TRILLIONTH OF A SECOND.

Most spiders have eight eyes.

THE WORLD'S  
MOST EXPENSIVE  
**TEA BAG**  
WAS DECORATED  
WITH 280  
DIAMONDS AND  
COST AROUND  
**\$14,000!**



# COOL inventions

BY CATHY LU



SOLAR PANELS ON THE ROOF!

## CHARGE ON THE GO

From school to band practice, the Venturi Eclectic is an Earth-friendly way to get where you want to go. This battery-powered, zero-emission (meaning it doesn't pollute the air) vehicle runs mainly on renewable energy instead of gas. Solar panels on the Eclectic's roof suck in sun rays when you're driving, stoking the battery. On windy days, you can connect a turbine to the car's roof that collects energy from the wind while you're parked. The battery also can be charged by plugging the car into a wall socket. The Eclectic's top speed is 28 miles an hour; the battery lasts for 31 miles before it needs to be recharged. Zipping around the neighborhood has never been greener.



## WATER CLOCK

Here's an eco-friendly way to tell time: Simply fill the Bedol Water-Powered Clock's tank with water, add some lemon juice, and the clock will display the time without the need for environmentally harmful batteries or wasteful wall plugs. There are two sets of metal electrodes inside the water tank. Water contains ions, or atoms that carry negative and positive charges. These ions complete a charge between the electrodes, creating enough energy to power the clock. The acidity of the lemon helps the ions react better with the electrodes by keeping them moving and active. Just refill the tank every few weeks, and this clock will keep on ticking.



PROJECTS FROM PAPER!



## POCKET MOVIE THEATER

Your team just won the soccer championship and can't wait to watch video of the winning goal. In the car on the way home, you whip out your cell phone and point it toward the back of the seat. Suddenly you're watching your team in action. It's all thanks to a pico projector, a tiny chip built into your phone. About the size of a raisin, this chip can project up to a ten-foot image or video onto any flat surface. You can display a slide show of your summer vacation on the bus, watch your favorite TV shows on a plane's tray table, or even project an image of a spider onto the ceiling of your sister's bedroom, just to freak her out.



# Guinness World Records

Go online for more information about Guinness World Records! [kids.nationalgeographic.com/Videos](http://kids.nationalgeographic.com/Videos)

# GIGANTIC HORSE

A large brown horse with white markings on its lower legs stands in a dirt paddock. A man wearing a cowboy hat, a light-colored shirt, and blue jeans stands to the left of the horse, holding its lead rope. The background shows a white fence and a line of trees. The text "ANTIC HORSE" is overlaid in the top left corner.

**REALLY  
LONG  
PEN**

## RICH MEAL



NAME	GRADE	RY	GUN	NW	WORK	RECORD	(RADAR)	ROLLAND		N	NW	WORK	R	CROSS	ALL
87	INCE	GATE	NN	THE	INFORMATION	PROVIDE	BY	SUPP	QUANT	N	B	95	01	LIMIT	

# video game CENTRAL

BY MARK MACDONALD

## HIGH ADVENTURE

Where would you search for adventure? Deep in the sweltering jungles of the Amazon rain forest? High atop the snowy mountains of Asia? How about right in your own cozy living room? Try any of these three games for a fun, instant adventure you can experience anytime you like.

### MYSTERY CASE FILES: RETURN TO RAVENHEARST



PC

Emma's soul may be free, but her ghost warns you that evil still dwells in Ravenhearst Manor. Get to the bottom of this mystery by exploring the mansion and gathering clues. Search carefully—you'll need to find a long list of crazy items hidden in the manor's cluttered rooms (everything from a tomato to a frog). You'll uncover and solve dozens of tricky puzzles that stand in your way.

»TIP #1: If you get stuck, try using the Crime Computer. It can skip puzzles, give clues about an item's purpose, or offer help on where to find some of the more well-hidden clues.

»TIP #2: Check your Casebook anytime you notice its icon change to an open book. It often includes notes about clues you might have missed.

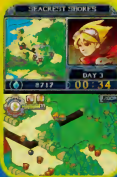


### LOCK'S QUEST

Nintendo DS

The kingdom is under attack, and only one man can save it: Lock. An architect—part architect and part engineer—Lock is not

your typical game hero. Control him as he builds walls, traps, and weapons to keep out an invading army of Clockwork enemies. Lock can defend himself with special skills like Vampire Drain or Lightning Storm, but he's much better off repairing turrets or buildings instead—they can stop enemy spells, freeze them in place, and more.



»TIP #1: Place your traps as far away as possible, down any path where the Clockworks might come. That way you will maximize the damage to them before they can reach you.

»TIP #2: After you complete the game, hold down the L trigger while choosing your player profile to view the game's final story sequence.

### PIKMIN

Wii

In *Pikmin* you play Captain Olimar, an alien who crash-lands on a mysterious planet and needs to collect the remains of his spaceship. The problem? He's less than an inch tall. Luckily tiny plant people called Pikmin are there to help protect him from the "giant monsters" (actually tiny bugs). Each color of Pikmin has a special skill: Blue ones can swim, red Pikmin can't be hurt by fire, and yellow Pikmin can carry bombs. Command your Pikmin army to solve puzzles and rebuild your ship.



»TIP #1: Once you have all three Pikmin Onions, check back on the main menu for a new option: Challenge Mode. Try to gather as many Pikmin as you can in a single day.

»TIP #2: Press down on the D-pad to lie down. If you have at least four Pikmin around, they will carry you back to base camp, where you'll be treated to a fireworks display.

# Amazing Animals

## PELICAN SWALLOWS DOG!

Hörstel, Germany

Don't try to take a treat from *this* pelican! At least that's the lesson Katijina the Australian ridgeback dog learned when she stole a frozen chicken treat from Petri the pelican one afternoon. The result? Petri poked around the dog's mouth, prodded inside her ear, and then even tried to swallow Katijina's head—all in search of the missing snack. "Little did Petri know that Katijina ate the treat in one bite," says Roland Adams, who owns the sanctuary where Katijina and Petri live with other dogs, birds, rabbits, and monkeys. Adams says the animals get along peacefully—most of the time. "It helps that Katijina just had puppies," he says. "It made her much more patient with Petri."

PETRI THE PELICAN PLAYFULLY TRIES TO MAKE A TREAT OUT OF KATIJINA'S HEAD.

PETRI CAN'T FIND HER TREAT IN KATIJINA'S EAR, EITHER!

A pelican uses its extendable throat under its beak as a net to catch fish.



## COW SCARES BEAR

Longmont, Colorado

Laid-back cows are usually no match for ferocious bears. Try telling that to Apple the cow, who chased a young black bear away after he stumbled into her pasture. "The bear jumped on top of a fence and got close enough to Apple that they were actually touching noses," says Penny Cox, who lives nearby and witnessed the action. After an intense stare-down between the curious animals, the bear fell off the fence and into the field. Then Apple chased him into the nearby woods. "She was bellowing and mooing the whole way," Cox says. Some people assumed that Apple was fiercely protecting her property, but owner Nancy Dayton thinks her cow was being friendly. "It's easy to paint Apple as this threatening 'watch cow,'" she says. "But I think she saw the bear as a buddy and was just trying to play."



A bear's strong claws help it climb even the tallest trees.

I CAN'T WAIT TO AUDITION FOR AMERICA'S GOT TALENT.



## WALRUS "PLAYS" SAXOPHONE

Istanbul, Turkey

Watch out, Jonas Brothers! You just might have some competition. When handed a toy saxophone, Sara the walrus grasps it in her flexible flippers and pretends to jam along to recorded jazz music. The 1,600-pound pinniped has even mastered the moves of a true musician, rocking from side to side as she toots away.

A walrus's flippers are naturally strong and flexible, helping the animal push along the Arctic ice and propel it through water. So her trainers at the Istanbul Dolphinarium thought she'd like to have a little fun with her flippers, too, and gave her the toy sax. "Sara has an amazing brain and is almost humanlike in the way she learns," says trainer Umit Demir. Of course, rewards—fish treats—didn't hurt!



Bet you  
**didn't  
know**

BY JONATHAN SCHAFER

# **6** incredible facts about the **ancient world**

**1** The Roman emperor  
**Caligula** wanted  
to make his horse a  
**senator**,  
according to ancient  
sources.

**3** Ancient  
Egyptians  
took up to  
**70 days**  
to make a  
**mummy**.

**5** The ancient  
**Maya**  
**chewed gum**  
made from  
**tree sap**.

**2** The ancient  
**Aztecs**  
traded cacao  
(cocoa) beans  
as **money**.

**4** Australian  
**Aborigines**—  
the world's  
oldest living  
**culture**—  
have existed  
for at least  
**50,000**  
years!

**6**  
**Earth**  
is the only planet  
not named after a  
**Greek or**  
**Roman god**.

# Just Joking

KNOCK,  
KNOCK.

Who's there?  
Dinosaur.  
Dinosaur who?  
Dinosaur because  
he fell down!

## ANOTHER LAME JOKE

Q What do  
patriotic  
apes wave  
on Flag Day?



Star-  
spangled  
bananas.

A

Q What happened when 500  
hares got loose in the center  
of town?



The police  
had to comb  
the area.

A

Q What do you  
call a very  
popular  
perfume?



A best-  
smeller.

A

## TONGUE TWISTER!

Say this  
fast three  
times:



Six slick sightseers click.

1 **A QUARTER'S  
EDGE HAS 119  
GROOVES;  
A DIME'S HAS 135.**



4 **THE BUREAU OF ENGRAVING  
AND PRINTING PRODUCES  
APPROXIMATELY  
38 MILLION  
BILLS A DAY  
WITH A FACE VALUE OF  
MORE THAN 274 BILLION  
DOLLARS.**

2 **A STACK OF  
CURRENCY  
ONE  
MILE  
HIGH  
WOULD  
CONTAIN  
MORE  
THAN 14  
MILLION  
BILLS.**



3 **WASHINGTON'S  
PORTRAIT** first  
appeared on the  
dollar bill in 1869.  
The President shared  
space with an image  
of Christopher  
Columbus.



5 **TORN-UP  
MONEY?**



As long as you can produce 51 percent of  
the bill, the Office of Currency Standards  
will replace it. Your bank may even mail  
the messed-up money for you.



# COOL THINGS ABOUT

BY C.M. TOMLIN

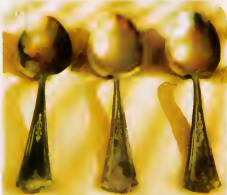
6 **IF YOU PLACED 2.2 MILLION DOLLARS IN PENNIES SIDE-BY-SIDE**



7 The two-dollar bill features an  
image based on an 1817 painting of  
47 men discussing the Declaration  
of Independence. But because of  
limited space, only 42 are on the bill.



8 **GOLD BARS WORTH NEARLY  
6.2 BILLION  
DOLLARS ARE LOCKED UP  
TIGHT IN A VAULT IN FORT  
KNOX, KENTUCKY. WHY? THE  
GOLD BACKS UP THE UNITED  
STATES' MONEY SYSTEM.**



10 **OFFICIALS BEGAN PRINTING  
PAPER MONEY WITH GREEN  
INK IN 1861 TO KEEP CROOKS  
FROM MAKING COUNTERFEIT  
(FAKE) MONEY. TODAY'S CASH  
IS GREEN BECAUSE THE COLOR  
DOESN'T FADE EASILY.**

11 **SECRET  
SERVICE**

agents protect the  
President today, but  
when the agency was created  
in 1865, its only job was to combat  
counterfeiters after the Civil War.  
(They still track funny money now.)



**LEGEND HAS IT THAT  
MARTHA  
WASHINGTON  
DONATED HER SILVERWARE  
TO MAKE THE COUNTRY'S  
FIRST COINS.**



THE CLOCK ON THE BACK OF THE HUNDRED-DOLLAR BILL READS 4:10. IT'S A MYSTERY WHY THIS TIME WAS CHOSEN.



13

UNTIL 1816, HORSES, OXEN, AND MEN POWERED THE MACHINES THAT MADE COINS AT THE U.S. MINT.



14

THE VERY FIRST BATCH OF COINS PRODUCED BY THE U.S. MINT, IN 1793, CONSISTED OF 11,178 PENNIES—ONLY \$111.78.

## BONUS! TIME Is Money

Here's about how long your money will last before it becomes too old to use.

\$1	21 months
\$5	16 months
\$10	18 months
\$20	24 months
\$50	53 months
\$100	89 months

# MONEY

E, THEY'D STRETCH FROM NEW YORK CITY TO SAN FRANCISCO, CALIFORNIA.

15



WHEN THE FIRST U.S. MINT OPENED IN PHILADELPHIA, IT WAS GUARDED BY A DOG THE GOVERNMENT BOUGHT FOR THREE DOLLARS IN 1793.

## BONUS! THIN' Mints

Many coins have a mint mark, a small letter that shows where the coin was made.

P = PHILADELPHIA, PENNSYLVANIA  
D = DENVER, COLORADO  
S = SAN FRANCISCO, CALIFORNIA  
W = WEST POINT, NEW YORK

16

Only two current U.S. bills do not feature Presidents: \$100 (Founding Father Benjamin Franklin) and \$10 (Alexander Hamilton, the first treasury secretary).



17

MONEY THAT IS TOO OLD OR WORN OUT OFTEN IS RECYCLED TO MAKE ROOFING TILES, STATIONERY, AND OTHER THINGS.



18

IF YOU HAD TO BILLION ONE-DOLLAR BILLS AND SPENT ONE EVERY SECOND, YOU WOULDN'T SPEND IT ALL FOR 317 YEARS.



19

George Washington refused to allow his portrait on money because he thought it made him

**LOOK LIKE A KING.**

(Guess folks ignored his wishes after Washington wasn't around to object anymore!)

20

THE PYRAMID ON THE BACK OF THE DOLLAR BILL REPRESENTS STRENGTH. THE MYSTERIOUS EYE SYMBOLIZES THE DESIGNERS' BELIEF THAT "PROVIDENCE" WAS WATCHING OVER AND PROTECTING THE UNITED STATES.

The  
**Secret**  
of the



# White **Lion**



## What's the truth about these controversial cats?

BY FIONA SUNQUIST    PHOTOGRAPHS BY KARINE AIGNER

**M**alaka the white lion stalks closer and closer. The target: wildlife photographer Karine Aigner, who is crouched in the grass, waiting for the perfect shot. She freezes as the lion closes in on her. Malaka takes a swipe with her big paw—and Aigner cracks up. Why? The white lions are captive and quite tame. In fact, the big cat's behavior reminds her of her little cat back home. These beautiful white cats are beloved by many people around the world. But they are controversial. Read on to discover the truth behind the white lions' existence.





White lions  
living in the wild are  
**extremely rare.**  
About **500 white lions** live  
in captivity around the world.





## TRUE COLORS

What exactly are white lions?

"They are a color variation of regular lions—not a separate species from the tawny-colored lions," says William Swanson, director of animal research at the Cincinnati Zoo, in Ohio. "And they are not an endangered species."

White lions are the result of a rare color gene mutation. When both a male and a female lion carry the same white genes, there is a good chance that one or more of their cubs will be born with white fur.

Not many lions carry the white mutation. In nature, it's rare. A mutation can make an animal's survival more difficult. For example, being white makes it harder for the animal to blend with its surroundings. Mutations also can cause physical deformity—so those animals generally do not survive long enough to reproduce.

But sometimes white lion cubs are born among wild lions, especially in two areas of South Africa.



In 1975 two white cubs were spotted in the wild in a South African reserve. They were captured and sent to a zoo. Today about 500 offspring of those two white lions and a few others known to have the white color gene live in captivity around the world in zoos, circuses, farms, and private preserves.

White lions may be extremely rare in the wild, but breeders know how to create more of them. This has created serious concern and debate.

White lions continue to exist only because people inbreed close relatives—fathers and daughters, sisters and brothers. "In white tigers, we know that inbreeding causes lots of problems, including distorted spines, cleft palates, bulging crossed eyes, and mental impairments," says Ron Tilson, a big cat





expert at the Minnesota Zoo. Based on this past experience, scientists worry that the mutation also will cause health issues for white lions.

Inbreeding to create white lions as moneymaking attractions is only one controversy. Another concern is that some people want to release captive-bred white lions into the wild in South Africa. "We want to restore balance to the ecosystem," says Jason Turner of the Global White Lion Protection Trust. However, not everyone agrees that releasing these white lions into the wild is a good idea. Dan York of Hillsdale College in Michigan has been studying white lion genetics and is worried. He says that because so many of today's white lions are inbred, it could spread health problems. If they breed with wild lions, they'll pass on the genetic problems to the wild population.

Instead of releasing captive-bred white lions, York suggests that South Africa concentrate on protecting all of its wild lions. That would ensure the safety of the wild population of lions, which may produce healthy white cubs in the future.



## Controversy swirls around these exotic small cats, too.

domestic cat  
+ leopard cat  
= bengal cat



domestic cat  
+ Geoffroy's cat  
= safari cat



domestic cat  
+ jungle cat  
= chausie cat



domestic cat  
+ serval  
= savannah cat



White lions come from one species: the lion. Other kinds of "designer cats" result from cross-breeding two different species: a domestic cat and a species of wild cat. Called hybrids, they have become popular pets but are also controversial. Critics say that these exotic pets keep a lot of their wild instincts, which means they can be unpredictable and dangerous.



# SPACE VACAT

## 5 destinations that are out of this world

BY DOUGLAS E. RICHARDS

**T**hrill-seekers have long traveled the Earth in pursuit of unforgettable vacations. But those who crave the ultimate in extreme adventure will soon be able to leave the Earth behind. In fact, several people have already paid millions to rocket into space and even have stayed on the International Space Station. So how far would you travel to play zero-gravity laser tag or go on safari to another planet?

Whether you want a relaxing vacation orbiting the Earth or a get-away so extreme it makes skydiving seem like a snooze, there's an outer space destination for you. Here are five out-of-this-world vacations that scientists believe will someday be possible. Which one you choose will depend only on how far you're willing to travel—and how extreme you're willing to get.

### DESTINATION 1

## Orbital Resort

When you arrive at your orbital resort, you'll be so excited to leave gravity behind that you'll be bouncing off the walls—and the ceiling! Gaze in awe at the ever-changing Earth as your hotel whips around it every 90 minutes. For close-up views, use your room's telescope. Flip and twist acrobatically to dodge the hundreds of blobs of water flying around in the water room or play a wild game of zero-gravity laser tag. Once you're ready to get your feet on the ground, just go to one of the rotating sections of the resort to create artificial gravity. At bedtime, try sleeping upside down!

### Getting There: A Real Blast

Your rocket blasts off and the deafening roar of its engines is so thunderous it vibrates your body like a giant electric toothbrush. Your heart pounds like a jackhammer as the ship's bone-jarring acceleration slams you into your seat and pins you there so forcefully you're barely able to breathe. This is the most excitement you've ever had in your life! All in all, not bad for the first five seconds of your vacation. Several companies are racing to build reusable spaceships for space tourism using advanced building materials and designs. "Traveling into orbit or to the moon will become common faster than people realize," says Burt Rutan, who designed the first civilian ship to make it into space. "The kids of today will definitely be able to travel to space in their lifetimes."



# TION



# The Space Elevator

Press the button for the millionth floor and ride in an elevator 22,000 miles straight up to space! Your elevator car is shooting through the clouds on an amazingly long cable—made of carbon nanotubes 100 times stronger than steel—attached to a satellite in space. Your elevator is soon racing at more than a thousand miles an hour, propelled upward by a cushion of magnetic force instead of wheels. Your heart races as you watch the Earth rapidly appear smaller and smaller below you, and the endless blue sky gradually turns into the starry blackness of space. You're in one of dozens of cars making the trip, with others hauling satellites, space-station parts and even spacecraft into orbit. When your elevator ride is over, you board a ship to the moon. Your remaining journey is far, far easier now that you've won most of your battle with Earth's gravity. "We will absolutely be able to do this," says Bradley Edwards, a scientist who studied the space elevator for NASA and even presented the idea to Congress. "And soon. Building a space elevator will be no more difficult or expensive than building one of the supertall skyscrapers that are currently under construction."

## Ultimate Moon Bounce

The moon isn't made from trampoline material, of course, but with gravity only one-sixth as strong as on Earth, you might think so every time you take a step and bounce off the ground. Playing a sport on the moon will make you feel like Superman. You'll be able to hit golf balls unearthly distances, leap ten feet to catch a football, and soar over your opponent to slam-dunk a basketball. But be sure to make time to exit the lunar dome in a rover and explore lava plains, enormous craters, and towering mountains.

Go online to play the cool space game "Pluto's Secret."

# A Sightseeing Cruise

Have lots of zero-gravity fun while you cruise to the most fantastic sights in the solar system. Catch extraordinary views of Mars. Continue on to Jupiter, a planet so enormous that if it were hollow, a thousand Earths could fit inside. Stare wide-eyed at Saturn's stunning rings—they're actually a collection of massive quantities of particles, mostly ice crystals—orbiting the planet. And whatever you do, don't miss spectacular Io, one of Jupiter's many moons. It's covered by lakes and rivers of lava, as well as massive mountains. Oh, and make sure to see Io's volcanic eruptions that can spew lava more than 150 miles high.

## There's Nothing the Matter With Antimatter

The solar system is billions of miles across, but your spaceship has plenty of power for the job. The old versions used nuclear and ion power, but your cruise ship actually uses antimatter as fuel. Yes, there really is such a thing! Antimatter and matter have exactly opposite charges, and when they come together—watch out! The explosion will knock your socks off, but more important, it will also move your spacecraft forward. How powerful is it? A speck of antimatter the size of a grain of sand would be enough to fuel your entire journey through the solar system—with plenty of energy to spare.



# Extreme Martian Adventure

Welcome to the red planet, a thrill-seeker's paradise. Climb Olympus Mons, the highest mountain in the solar system. (It's more than 15 miles high.) Hike down Valles Marineris, a system of canyons so vast and deep they could swallow several Grand Canyons. Lucky for you the gravity on Mars is only three-eighths as strong as on Earth. When you're ready for more, explore cave systems created by ancient volcanic eruptions. Or visit Mars' ice-covered poles for some unbelievable ski jumping. In the low gravity you'll sail above the slope for so long you might just think you're flying.

## Smooth Sailing

Sure, after exiting the space elevator you could board an advanced, nuclear-powered rocket to reach your Mars vacation destination, but to really travel in style, nothing beats sailing. Watch from an observation window as your pilot unfurls your ship's gigantic, mirrored sail. Thinner than paper, it catches solar pressure instead of wind. "We envision a sail so enormous it could cover 30 football fields," says Janine Daughters, a member of NASA's solar sail team. Solar pressure reflecting off this sail will accelerate your ship—ever so slightly. While tiny, these never-ending pushes add up, and before long you're traveling at incredible speeds. "The great thing about using pressure from the sun to power your ship is that you don't have to carry any fuel with you or worry about running out," says Daughters.



A SOLAR SAIL LIKE THIS NASA CONCEPT MAY SOMEDAY POWER YOUR SPACE CRUISER.



# Adventures Beyond the Solar System

Safari on an alien planet with life-forms stranger than you can imagine. Take a quiet nature hike on a forest planet with trees the size of skyscrapers and waterfalls that dwarf Niagara. Travel to the edge of a black hole (from a safe distance!) and watch it suck down whatever comes close. An endless variety of unearthly vacation adventures might someday be possible. If we can find a way to easily transport vacationers into space, the sky—or in this case the galaxy—really is the limit.

## Exceeding the Ultimate Speed Limit

Scientists believe it's impossible to travel faster than light. But if you can't break the speed limit, maybe it's possible to shorten the journey. If an ant at the bottom of this page had to climb to the top, you could speed up its trip by folding the page in half, bringing the bottom and top edges together, so the ant could make the journey in a single step. Scientists might someday be able to do the same with the universe by folding space-time and creating shortcuts called wormholes. NASA is interested in this and other ideas for traveling to the stars, hoping that in the really far future they'll become reality.



# PENGUINE

Hundreds of people help these lost birds return home.

**L**ost and starving, hundreds of scrawny Magellanic penguins stumble onto the beaches of northeastern Brazil, in South America. Nearly a thousand miles off course, the eight- to nine-month-old birds are not just in bad shape; they're dying. It's July 2008.

Their adventure—or misadventure—begins a few months earlier, when the birds plunged into the ocean for the first time.

## INSTANT SURVIVOR

A penguin's first year is a whirlwind of challenges so treacherous it makes the TV show *Survivor* look easy. At first, penguin parents coddle and protect their chick. But when the chick is four to five months old, its parents abandon it. Surviving on instinct, the young penguin must instantly learn to swim, find food, and avoid predators.

Every March, juvenile and adult Magellanic penguins migrate north from Chile and Argentina, following a warm ocean current full of tasty prey: anchovies, sardines, and squid. The penguins swim, eat, and grow fat for 1,000 miles. When the food supply or current fades, the birds

make a U-turn and head back home. In 2008, however, the inexperienced youngsters are searching for food too far north and can't find it. The adult penguins and the penguins' prey turn around, but not the young ones. Months later as many as 2,500 very lost young penguins wash ashore far from home.

## HEALING HELP

Concerned people spot the penguins on the beach and quickly notify a local marine rehabilitation center. They contact Valeria Ruoppolo, a veterinarian and expert in large-scale penguin rescue operations. A team of rescuers goes into action. The penguins are too weak and dehydrated to stand or eat. "The key is rehydrating them the first few days," says Ruoppolo. Tube-feeding fluids and a special seafood smoothie that includes fish, vitamins, and medicine helps them quickly regain their strength. In a day or two, when they can stand, whole fish become part of their diet.

In addition to the penguins' diets, keepers also monitor the seabirds' feathers, the birds' only waterproofing.

A penguin can't survive without perfect feathers. "When the birds are too

weak to swim, we spray them with warm water after we feed them, so the fish oils don't foul the feathers," says Ruoppolo. When penguins are healthy enough, keepers make them swim after every meal to rebuild strength and keep feathers clean. "They love it when they finally get back into the water," adds Ruoppolo. Magellanic penguins spend most of their lives at sea.

After two months of care, it's time for many of the penguins to go home. To be released, they need to reach the proper weight, have pristine feathers, and be free of disease and parasites. "Though they're incredibly tough birds, surviving at sea takes an exceptional athlete in perfect health," says Ruoppolo. Those unable to pass the physical must stay in zoos.

## COFFEE, TEA, SARDINE?

Just after midnight, riding in specially made crates with 25 birds in each, 399 penguins fly for the first and only time—by plane! Their destination is the tip of southeastern Brazil, where Magellanic penguins commonly visit during their migration. The scientists accompanying them are thrilled to be involved in the largest penguin release in South American history.





# Rescue



BACK ON THE BEACH

After landing early in the morning, the staff quickly loads the birds onto trucks for a ride to another rehabilitation center to rest for a day. The penguins eat, rest, and get one last examination. Then it's time to say good-bye.

Moved to a temporary pen just a few feet from the water, the birds wait impatiently as the sound and smell of the ocean calls them. As soon as the pen opens, the birds rush toward home. Ruoppolo, her colleagues, and a crowd of well-wishers cheer as the penguins scramble into the rolling waves, quickly swim past the breakers, and disappear into the sea.



IN GOOD HEALTH



# Fun Stuff

games, laughs, and lots to do!

## National Parks TRIVIA CHALLENGE

If you want to feel the heat from an erupting volcano or explore a prehistoric cave, which national park would you visit? The United States is home to 58 national parks that are visited by more than 61 million people every year. Take this trivia challenge and find out how much you know about these amazing natural treasures. **ANSWERS ON PAGE 30**

1

This desert destination is named after the wacky-looking twisted trees that appear throughout its 800,000 acres. Which desert could you be in if you visited this park?

- A. Sahara
- B. Mojave Desert
- C. Kalahari Desert
- D. Antarctica—the coldest desert on Earth!

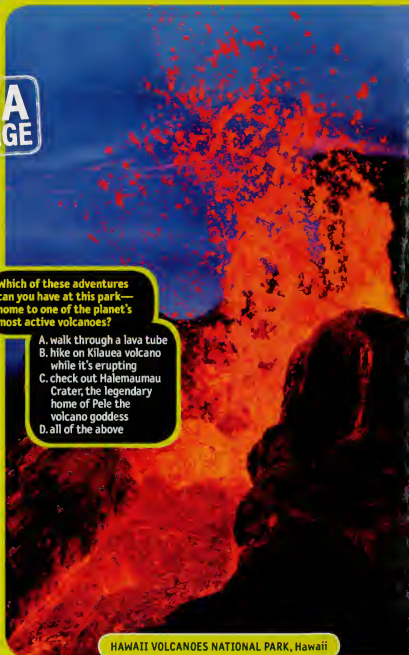


JOSHUA TREE NATIONAL PARK, California

2

Which of these adventures can you have at this park—home to one of the planet's most active volcanoes?

- A. walk through a lava tube
- B. hike on Kilauea volcano while it's erupting
- C. check out Halemauau Crater, the legendary home of Pele the volcano goddess
- D. all of the above



HAWAII VOLCANOES NATIONAL PARK, Hawaii

Go online to check out other cool photos of national parks. [kids.nationalgeographic.com](http://kids.nationalgeographic.com)

3

What funny name is used for the bizarre, totem-pole-shaped rock formations at this destination?

- A. gremlins
- B. rock-and-rollers
- C. chutes and ladders
- D. hoodoos



BRYCE CANYON NATIONAL PARK, Utah

4

If these four animals—which live in this scenic park—competed in a 50-yard dash, which one would win?

- A. bison
- B. pronghorn
- C. beaver
- D. grizzly bear

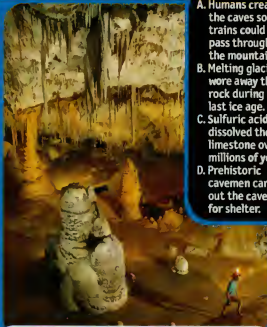


GRAND TETON NATIONAL PARK, Wyoming

5

There are 116 limestone caves in this park. Which is the real explanation for how these caves were formed?

- A. Humans created the caves so trains could pass through the mountains.
- B. Melting glaciers wore away the rock during the last ice age.
- C. Sulfuric acid dissolved the limestone over millions of years.
- D. Prehistoric cavemen carved out the caves for shelter.



CARLSBAD CAVERNS NATIONAL PARK, New Mexico

6

This marshy wetland is teeming with wildlife. According to legend, which of its many animals did early sailors mistake for mermaids?

- A. pythons
- B. crocodiles
- C. manatees
- D. turtles



EVERGLADES NATIONAL PARK, Florida

7

This park is known for its scorching climate and its snow-covered mountaintops. Which of these extremes would you find here?

- A. the driest spot in North America
- B. the hottest spot in North America
- C. the lowest spot in North America
- D. all of the above



DEATH VALLEY NATIONAL PARK, California and Nevada

8

When you strap on your snorkel mask and swim along the park's underwater snorkel trail, which of these sea creatures are you most likely to spot?

- A. sea turtles
- B. great white sharks
- C. penguins
- D. Loch Ness monster



VIRGIN ISLANDS NATIONAL PARK, Virgin Islands

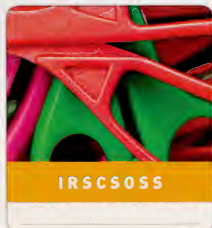
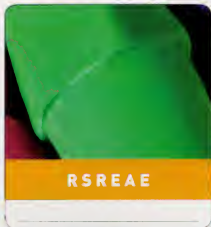
# What in the World?

Play interactive "What in the World?" and other games online.  
[www.nationalgeographic.com](http://www.nationalgeographic.com)



## SCHOOL DAZE

These images show close-ups of things you might see at school. Unscramble the letters to identify what's in each picture. Ready for recess? **ANSWERS ON PAGE 30**



TOP ROW (LEFT TO RIGHT): SHUTTERSTOCK/PHOTOGRAPHY; BOW CASEY / GETTY IMAGES; © DYNAMIC GRAPHICS / GETTY IMAGES / JAPANESE IMAGES  
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# Funny FILL-IN

## Go Fish!

BY JILL YAWORSKI

Ask a friend to give you words to fill in the blanks in this story without showing it to him or her. Then read out loud for a laugh.



My granddad is the \_\_\_\_\_ fisherman of all time. Once he even reeled in a(n) \_\_\_\_\_  
 \_\_\_\_\_-pound \_\_\_\_\_! I couldn't wait for him to teach me how to  
 \_\_\_\_\_ a boat. We packed the tackle box full of \_\_\_\_\_ and rowed our  
 wooden \_\_\_\_\_ into the middle of the \_\_\_\_\_ River. Things were going  
 \_\_\_\_\_ until I noticed the boat was filling up with \_\_\_\_\_. Thinking quickly,  
 I used a(n) \_\_\_\_\_ to scoop out the water while Gramps tried to plug the hole with his  
 \_\_\_\_\_. But the boat was \_\_\_\_\_ as fast as a(n) \_\_\_\_\_.  
 I yelled, "Abandon ship!" and \_\_\_\_\_ overboard. I started \_\_\_\_\_ to shore as  
 fast as I could. Just then I heard Gramps laughing. That's when I realized the water only came up as high  
 as my \_\_\_\_\_. Feeling \_\_\_\_\_, I \_\_\_\_\_ back to the boat. We  
 stayed and fished in our half-sunk boat for hours. By the end of the day we had caught \_\_\_\_\_  
 fish! Then we walked back to shore, \_\_\_\_\_ the \_\_\_\_\_ boat behind us.



# Art Zone

## AWESOME TOYS!

Check out these wacky toy inventions, drawn by NG KIDS readers.



▼ **My Air Shoes**  
Luke S., 14  
La Verne, California



▼ **PopChick**  
Stella S., 9  
Chicago, Illinois



# BIG WINNER!

Congratulations to the 2009 National Geographic Bee champion, Eric Yang, 13, from The Colony, Texas. He won a \$25,000 college scholarship, a trip to the Galápagos Islands, and a lifetime membership to the National Geographic Society. Ask your principal to register for the 2010 Bee by October 15, 2009. [nationalgeographic.com/geographicbee](http://nationalgeographic.com/geographicbee)



▼ **The Floating Air Board**  
Serena B., 8  
Hollis Hills, New York



▼ **Toy Bot**  
Connor S., 8  
Mississauga, Ontario, Canada



▼ **U.S. Army Bear**  
Melissa G., 11  
Canyon Lake, Texas

## Draw your own design for a cool amusement park.

Send your original drawings to  
NG KIDS—Amusement Park Art Zone  
P.O. Box 98002  
Washington, DC 20090-8002

Include your name, address, phone number, date of birth, a title for your drawing, a statement that it is your own work, and the name of your parent or guardian. Your parent or guardian must sign a release for publication of your illustration. Submissions become the property of the National Geographic Society, and all rights therein are transferred to the National Geographic Society. Submissions cannot be acknowledged or returned. Selection will be at the discretion of NG KIDS.

## Answers

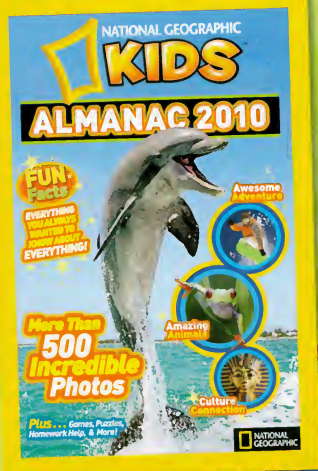
pencil sharpener  
Bottom row: scissors, backpack,  
eraser  
Middle row: ballpoint pen,  
ruler, water fountain,  
and Colorado desert  
Top row: "Which in the World?" (page 28),  
5, C, 4, 2, D, B, A  
on the map in the United States  
on the map in the United States  
often mistaken for a small  
4, B. The penguin—Which is  
and Colorado desert is 2, D, 3, D  
National Park straddles the Mojave  
pages 26-27, 1, B. Joshua Tree  
"National Parks Thru Challenge"

▼ **Dance Bot**  
Ethan N., 9  
Henderson, Tennessee



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